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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Yoshinobu Kubota

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EXAMINER

KAO, CHIH CHENG G.

ART UNIT

PAPER NUMBER

2882

DATE MAILED: 02/28/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/761,778

Applicant(s)

KUBOTA ET AL.

Examiner

Chih-Cheng Glen Kao

Art Unit

2882

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 November 2002.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☒ Claim(s) 2-4, 6 and 10 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 October 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Objections

1. Claim 2 is objected to because of the following informalities. Claim 2 recites the limitation "one of said plurality of optical elements" in line 2. There is insufficient antecedent basis for this limitation in the claim. This objection may be obviated by replacing "one of said plurality of optical elements" with - -one optical element- -. For purposes of examination, the claim will be treated as such. Appropriate correction is required.

2. Claim 3 is objected to because of the following informalities. Claim 3 recites the limitation "one of said plurality of optical elements" in line 2. There is insufficient antecedent basis for this limitation in the claim. This objection may be obviated by replacing "one of said plurality of optical elements" with - -one optical element- -. For purposes of examination, the claim will be treated as such. Appropriate correction is required.

3. Claim 4 is objected to because of the following informalities. Claim 4 recites the limitation "two of said plurality of optical elements" in line 2. There is insufficient antecedent basis for this limitation in the claim. This objection may be obviated by replacing "two of said plurality of optical elements" with - -two optical elements- -. For purposes of examination, the claim will be treated as such. Appropriate correction is required.

Art Unit: 2882

4. Claim 6 is objected to because of the following informalities. Claim 6 recites the limitation "one of said plurality of optical elements" in lines 2 and 7. There is insufficient antecedent basis for this limitation in the claim. This objection may be obviated by replacing both instances of "one of said plurality of optical elements" with - -one optical element- -. For purposes of examination, the claim will be treated as such. Appropriate correction is required.

5. Claim 10 is objected to because of the following informalities. Claim 10 recites the limitation "said substrate" in line 2. There is insufficient antecedent basis for this limitation in the claim. This objection may be obviated by replacing "said" with - -a- -. For purposes of examination, the claim will be treated as such. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1, 2, 4, and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inoue et al. (US Patent 5117470).

Inoue et al. discloses an optical circuit (Title) comprising: a first optical element (Fig. 32, #61) on a substrate (Fig. 32, #9 having an optical coupling part (Fig. 32, #70a), and a second

Art Unit: 2882

optical element on the substrate guiding light from the first optical element (Fig. 32, #63), with a plurality of Mach-Zehnder interferometer type optical element (Fig. 32, #70a, 70b, 70c), a first (Fig. 32, #62) and second (Fig. 32, #61) waveguide, wherein at least two optical elements are connected in tandem (Fig. 32, #70a and 70b).

Inoue et al. teaches an optical waveguide guiding light emitted from an optical coupling part (Fig. 1, #2b' from #5) in the prior art.

It would have been obvious to one having ordinary skill in the art at the time the invention was made, to have an optical waveguide guiding light emitted from an optical coupling part in the prior art of Inoue et al. with the device of Inoue et al., since one may be motivated to output light to separate locations (i.e. "a directional coupler") from a single source as implied from Inoue et al. (Fig. 1, and col. 1, lines 42-45).

7. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Inoue et al. as applied to claim 1 above, and further in view of House (US Patent 6298177).

Inoue et al. suggests a device as recited above.

However, Inoue et al. does not disclose the Mach-Zehnder as an optical modulator.

House teaches the Mach-Zehnder as an optical modulator (col. 5, lines 25-30).

It would have been obvious to one having ordinary skill in the art at the time the invention was made, to have the modulator of House with the device of Inoue et al., since one, based on engineering efficiency, may be motivated to use it for building a switch as shown by House (col. 5, lines 25-30).

Art Unit: 2882

8. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Inoue et al. as applied to claim 1 above, and further in view of Asano et al. (US Patent 5621839).

Inoue et al. suggests a device as recited above.

However, Inoue et al. does not disclose a ferroelectric substrate.

Asano et al. teaches a ferroelectric substrate (Title).

It would have been obvious to one having ordinary skill in the art at the time the invention was made, to have the ferroelectric substrate of Asano et al. with the device of Inoue et al., since one would be motivated to build a device in which a light dividing ratio and a light insertion loss are not varied as shown by Asano et al. (col. 2, lines 9-16).

9. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Inoue et al. as applied to claim 1 above, and further in view of Ooi et al. (US Patent 5917628).

Inoue et al. suggests a device as recited above.

However, Inoue et al. does not disclose a clock to modulator to change the refractive index and a signal voltage to a second modulator to an electrode according to information transmitted to the electrode.

Ooi et al. teaches a clock to modulator (Fig. 1, #62) to change the refractive index (inherent) and a signal voltage to a second modulator to an electrode (Fig. 1, #63) according to information transmitted to the electrode (Fig. 2).

It would have been obvious to one having ordinary skill in the art at the time the invention was made, to have the clock and voltage signals to modulators of Ooi et al. with the device of Inoue et al., since, based on engineering efficiency, one would be motivated to build

Art Unit: 2882

this configuration to make a conventional optical time-division multiplexer (col. 5, lines 35-68) as implied from Ooi et al.

10. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Inoue et al. as applied to claim 1 above, and further in view of Hosoi (US Patent 5475771).

Inoue et al. suggests a device as recited above.

However, Inoue et al. does not disclose a lithium niobate substrate.

Hosoi teaches a lithium niobate substrate (col. 1, lines 11-15).

It would have been obvious to one having ordinary skill in the art at the time the invention was made, to have the substrate of Hosoi with the device of Inoue et al., since one would be motivated to create a large electromechanical coupling coefficient when building a device as shown by Hosoi (col. 1, lines 11-15).

11. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Inoue et al. in view of Sano et al. (JP 01-097905).

Inoue et al. discloses a substrate (Fig. 15, #9a) with two optical elements (Fig. 15, #51 and 52) and a first optical waveguide connecting the elements upstream to downstream (Fig. 15, #55a).

However, Inoue et al. does not disclose a pair of second optical waveguide formed on both sides of the first optical element to guide unnecessary light.

Sano et al. teaches a pair of second optical waveguides formed on both sides of the first optical element to guide unnecessary light (Abstract, and Fig. 1, #4 and 5).

It would have been obvious to one having ordinary skill in the art at the time the invention was made, to have the second optical waveguides of Sano et al. with the device of Inoue et al., since one would be motivated to use those waveguides to create a large attenuation quantity in the stop band to suppress unnecessary light as implied from Sano et al. (Abstract).

12. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Inoue et al. in view of Miller et al. (US Patent 5703975).

Inoue et al. discloses a first optical waveguide (Fig. 32, #70a) on a substrate (Fig. 32, #9) connecting optical elements (Fig. 32, #61 and 63).

However, Inoue et al. does not disclose a second optical waveguide formed to guide subsidiary light from the first waveguide in this embodiment.

Miller et al. teaches a second optical waveguide formed to guide subsidiary light from the first waveguide in this embodiment (col. 13, lines 1-15, and Fig. 8).

It would have been obvious to one having ordinary skill in the art at the time the invention was made, to have the waveguide with subsidiary light of Miller et al. with the device of Inoue et al., since one would be motivated to use the light to create devices with zero power transfer functions (col. 13, lines 1-20) as implied from Miller et al.

Response to Arguments

13. Applicant's arguments with respect to claims 1-10 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chih-Cheng Glen Kao whose telephone number is (703) 605-5298. The examiner can normally be reached on M - Th (8 am to 5 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on (703) 305-3492. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7724 for After Final communications.

Art Unit: 2882

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

gk
February 24, 2003

ROBERT H. KIM
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TECHNOLOGY CENTER 2000